Chemistry -

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and the changes it undergoes

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mass vs. weight
weight can change based
on gravity

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Law of Conservation of Matter
↳ matter cannot be
created nor destroyed
by ordinary means.

Energy -

Energy - the ability to cause change or do work

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Kinetic E -

Potential E -

Energy - the ability to cause change or do work

Kinetic E - E of Motion

Potential E - Stored E

Energy - the ability to cause change or do work

Kinetic E - E of Motion

Potential E - Stored E - in chemical Bonds

Law of Conservation
of E -

Law of Conservation of E - Energy cannot be created nor destroyed, just converted from one form to another

Law of Conservation of E - Energy cannot be created nor destroyed, just converted from one form to another

KE ⟷ PE

slates of matter

gas

liquid

solid

slates of matter

gas

liquid

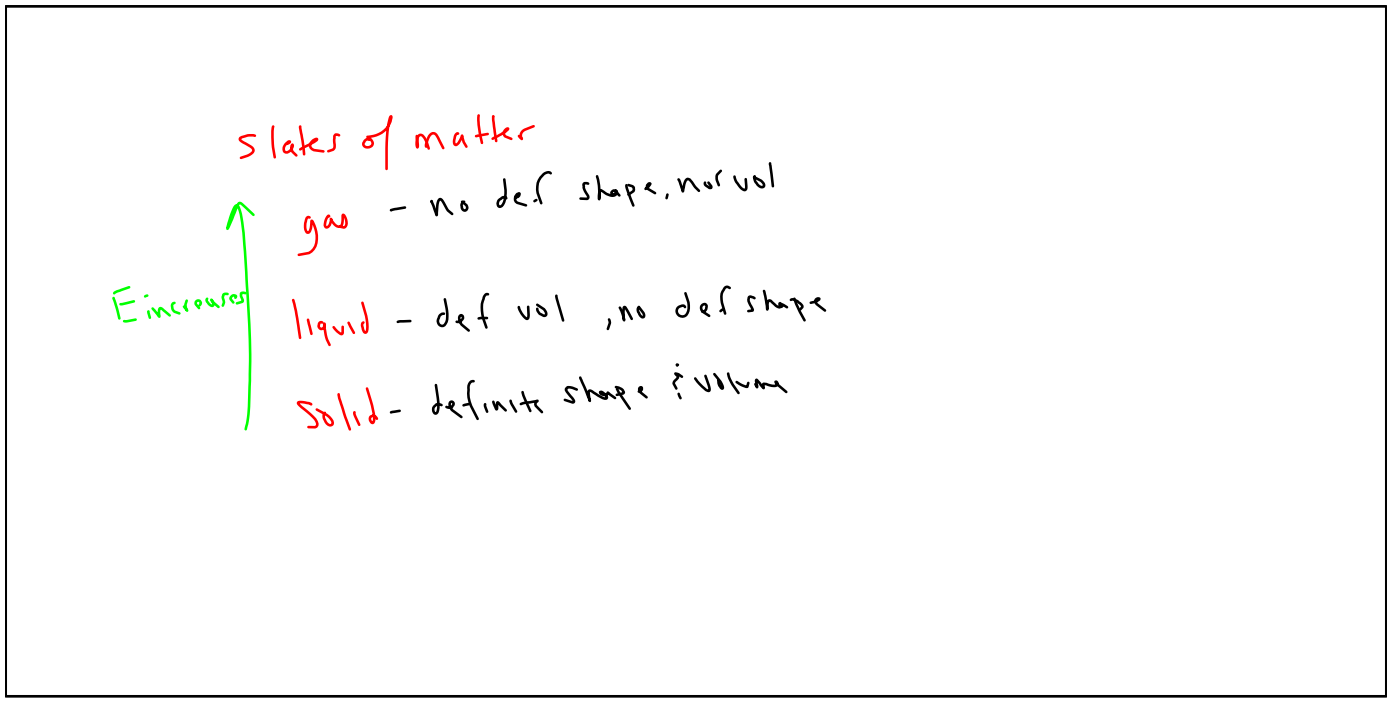
solid - definite shape & volume

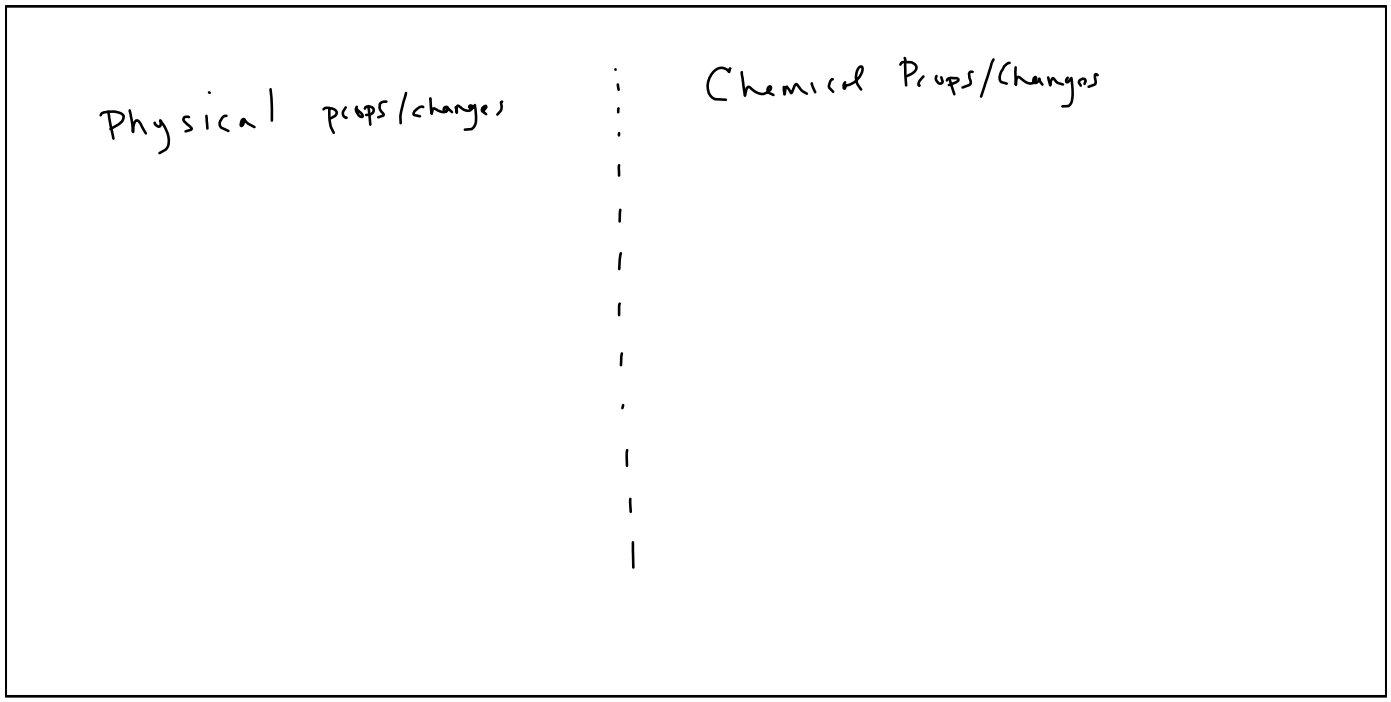
States of matter

gas - no def shape, nor vol

liquid - def vol, no def shape

Solid - definite shape & volume


States of matter
gas - no def shape, nor vol
liquid - def vol, no def shape
Solid - definite shape & volume
E increases


Physical props/changes
Chemical Props/Changes

Physical props/changes

↳ observed w/o changing the chemical make ↑

Chemical Props/Changes

Physical props/changes

↳ observed w/o changing the chemical make ↑

Ex.

color
taste
odor

Density
Melting Pt
Boiling Pt

size, shape
texture
mass, volume

Chemical Props/Changes

Physical props/changes

↳ observed w/o changing the chemical make ↑

Ex. intensive

color
taste
odor

Density
Melting Pt
Boiling Pt

extensive

size, shape
texture
mass, volume

Chemical Props/Changes

Physical props/changes

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taste Melting Pt

Odor Boiling Pt

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size, shape

texture

mass, volume

Chemical Props/Changes

↳ obs while changing the chemical make ↑

Physical props/changes

↳ observed w/o changing the chemical make ↑

Ex. intensive: color, taste, odor, Density, Melting Pt, Boiling Pt

extensive: size, shape, texture, mass, volume

Chemical Props/Changes

↳ obs while changing the chemical make ↑

→ take place during a chemical Rxn.

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lines of evidence of a chem Rxn

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1. gas Released (Bubbles)

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lines of evidence of a chem Rxn

1. gas Released (Bubbles)
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3. E Released (heat, light, sound)

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Ex. intensive: color, taste, odor, Density, Melting Pt, Boiling Pt

extensive: size, shape, texture, mass, volume

Chemical Props/Changes

↳ obs while changing the chemical make ↑

→ take place during a chemical Rxn.

lines of evidence of a chem Rxn

1. gas Released (Bubbles)
2. color change
3. E Released (heat, light, sound)
4. precipitate forms (solid)

Classification of Matter

Classification of Matter

2 types → Mixtures or Pure Substances

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Mixtures

Classification of Matter

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Mixtures – Physical combination of 2 or more substances in which they Retain their individual props and can be physically separated

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3 types: Suspension

Colloid

Solution

Classification of Matter

2 types → Mixtures or Pure Substances

Mixtures – Physical combination of 2 or more substances in which they Retain their individual props and can be physically separated

3 types: Suspension - largest → filters, settle out. can see them

Colloid

Solution

Classification of Matter

2 types → Mixtures or Pure Substances

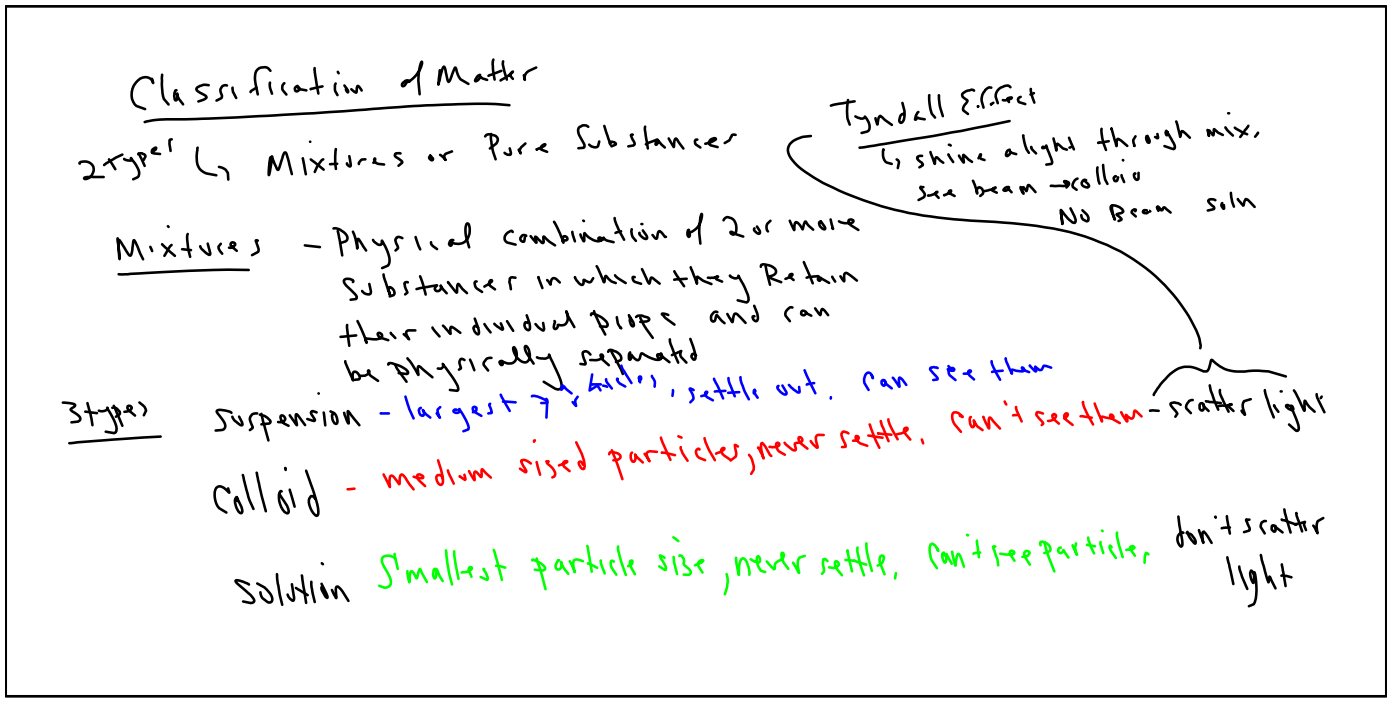
Mixtures – Physical combination of 2 or more substances in which they Retain their individual props and can be physically separated

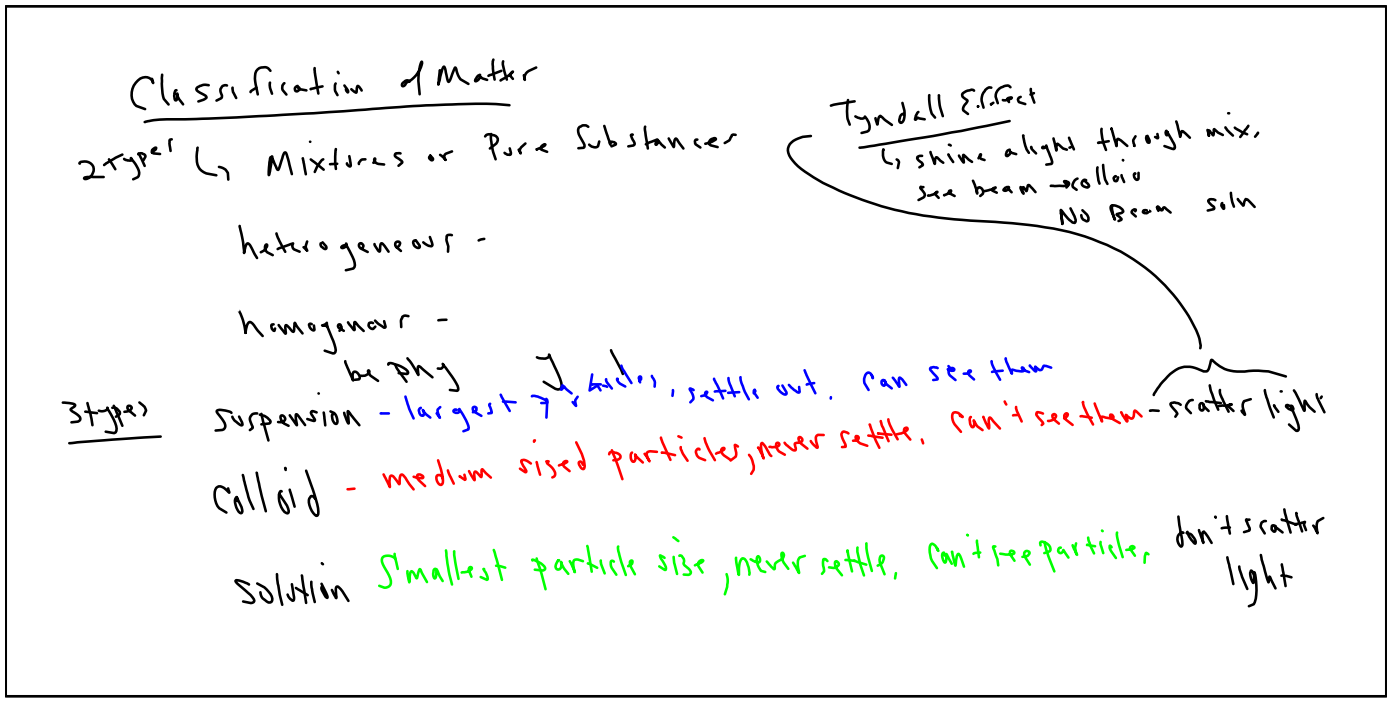
3 types

Suspension - largest particles, settle out, can see them

Colloid - medium sized particles, never settle, can't see them - scatter light

Solution - Smallest particle size, never settle, can't see particle, don't scatter light


Classification of Matter
2 types ↳ Mixtures or Pure Substances
Mixtures – Physical combination of 2 or more Substances in which they Retain their individual props and can be physically separated
3 types
Suspension - largest ↳ filter, settle out. can see them
Colloid - medium sized particles, never settle, can't see them - scatter light
Solution Smallest particle size, never settle, can't see particle, don't scatter light
Tyndall Effect
↳ shine a light through mix.
see beam → colloid
No Beam soln


Classification of Matter
2 types → Mixtures or Pure Substances
heterogeneous -
homogenous -
by phy
3 types
suspension - largest → big particles, settle out. can see them
Colloid - medium sized particles, never settle, can't see them - scatter light
solution Smallest particle size, never settle, can't see particle, don't scatter light
Tyndall Effect
→ shine a light through mix.
see beam → colloid
No Beam soln

Pure Substance,

Pure Substance,
A type of Matter:

Pure Substance,

A type of Matter:

. has the phys/chem prop

Pure Substance,

A type of Matter that:

- has the same phys / chem prop
- has the same chemical make ↑ } No matter the source or size of sample

Pure Substance,

A type of Matter that:

- has the same phys / chem prop
- has the same chemical make-up

} No matter the source or size of sample

Law of Definite Composition

$C_{12}H_{22}O_{11}$

Pure Substance,

A type of Matter that:

- has the same phys / chem prop
- has the same chemical make ↑ } No matter the source or size of sample

Law of Definite Composition

$C_{12}H_{22}O_{11}$ 42:1.C
6:1.H
52:1.O

Pure Substance,

A type of Matter that:

- has the same phys / chem prop
- has the same chemical make ↑ } No matter the source or size of sample

Law of Definite Composition

$C_{12}H_{22}O_{11}$ 42:1.C 6:1.H 52:1.O

- can't be broken ↓ w/o losing its chemical and physical prop

Pure Subs

2Types

pure Subs

2Type

element

Pure Subs (PS)

2 Types

element - sample of a PS that contains only one kind of atom

↳ cannot be broken down

Compound

Pure Subs (PS)

2 Types

element - sample of a PS that contains only one kind of atom

↳ cannot be broken ↓

Compound

Pure Subs (PS)

2 Types

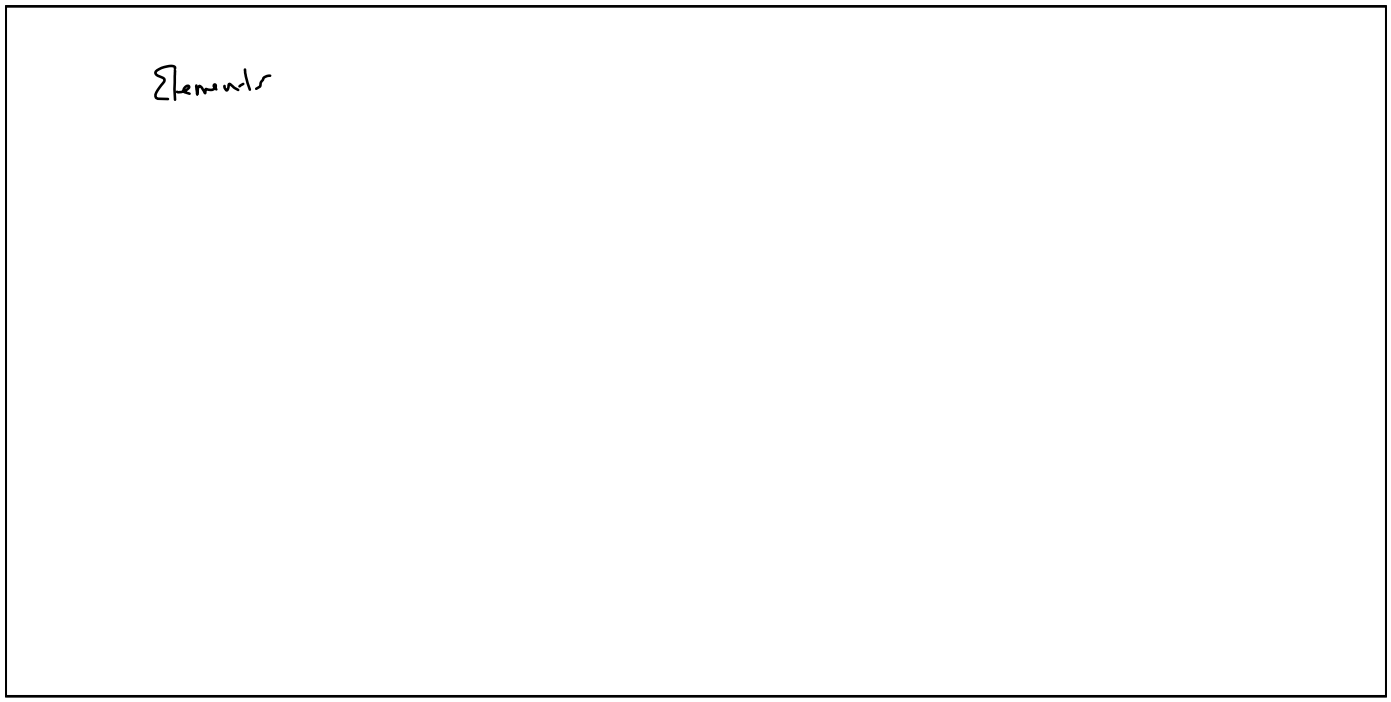
element - sample of a PS that contains only one kind of atom
↳ cannot be broken ↓

Compound - 2 or more different atoms chemically bonded together
↳ can get broken ↓

Pure Subs (PS)

2 Types

	Smallest unit
element - sample of a PS that contains only one kind of atom ↳ cannot be broken ↓	atom
Compound - 2 or more different atoms chemically bonded together ↳ can get broken ↓	molecule



Elements
↳ organized on the periodic table

Elements

↳ organized on the periodic table

groups

periods

Elements
↳ organized on the periodic table

groups (families) -

periods -

Elements
↳ organized on the periodic table

groups (families) - (1-18) — columns - elements w/ similar props

periods -

Elements
↳ organized on the periodic table

groups (families) - (1-18) — columns - elements w/ similar props

periods - ROWS (1-7)

Elements
↳ organized on the periodic table

groups (families) (1-18) - columns - elements w/ similar props

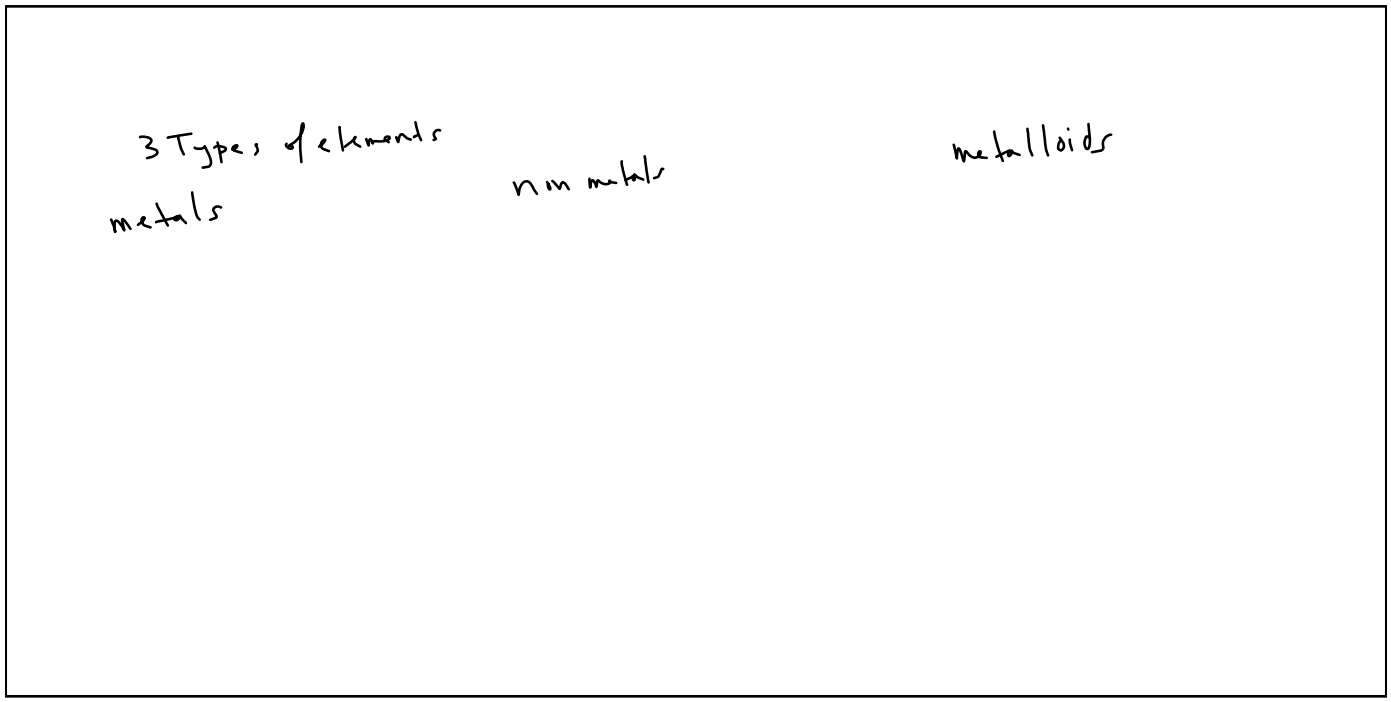
periods (1-7) - ROWS - elements w/ similar masses + Atomic #

3 Types of elements

metals

non metals

metalloids


3 Types of elements
metals
non metals
metalloids

3 Types of elements

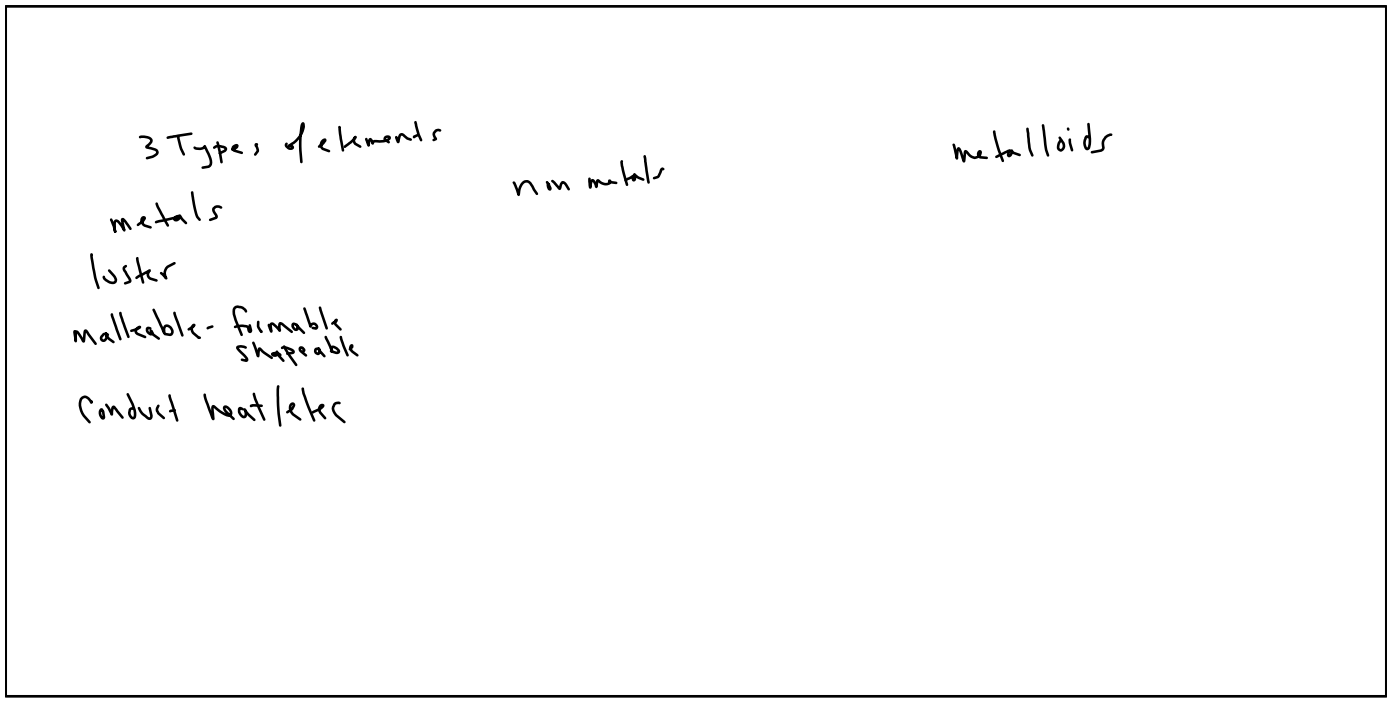
metals

luster

malleable - formable
shapeable

non metals

metalloids


3 Types of elements
metals
luster
malleable - formable
shapeable
conduct heat/elec
non metals
metalloids

3 Types of elements

metals

luster

malleable - formable
shapeable

conduct heat/elec

ductility - drawn into wire

tensile strength -

non metals

metalloids

3 Types of elements

metals

non metals

metalloids

luster

malleable - formable
shapeable

conduct heat/elec

ductility - drawn into wire

tensile strength - Resistance to Being Pulled apart

3 Types of elements

metals

luster

malleable - formable
shapeable

conduct heat/elec

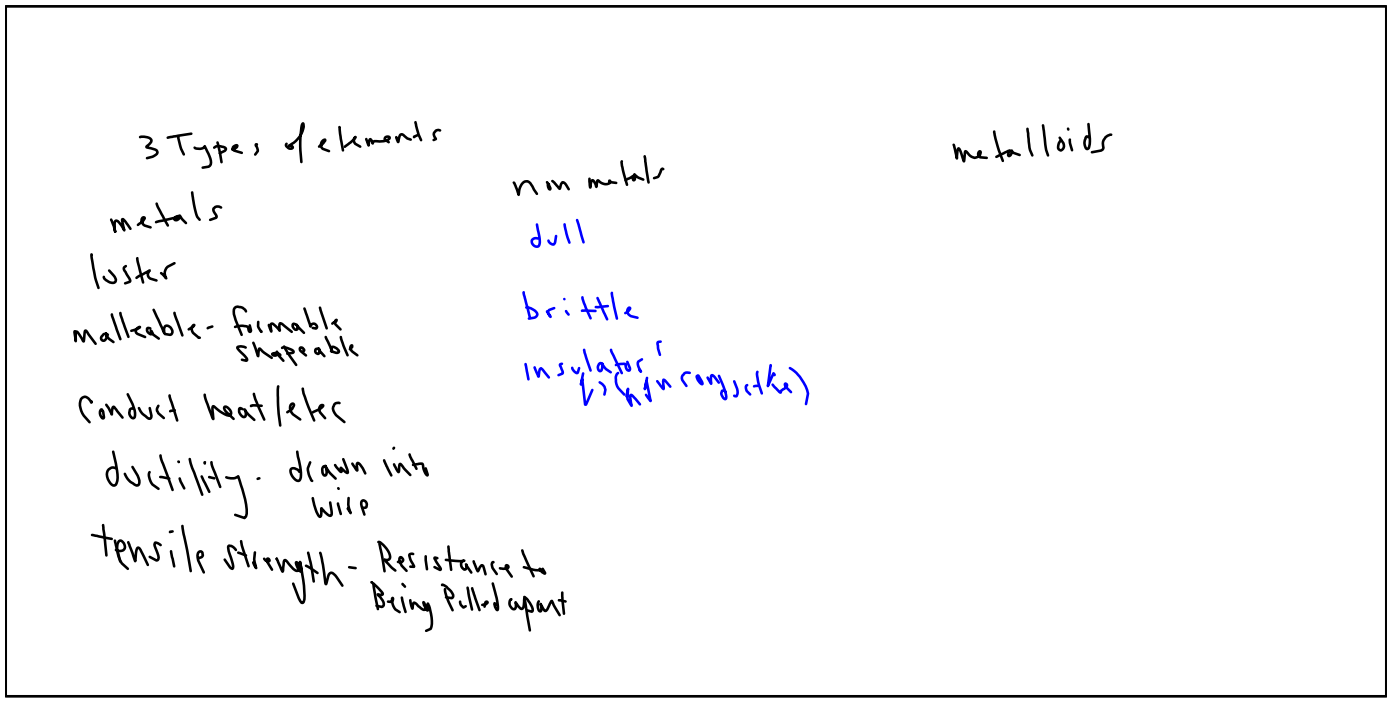
ductility - drawn into wire

tensile strength - Resistance to Being Pulled apart

non metals

dull

metalloids


3 Types of elements
metals
luster
malleable - formable
shapeable
conduct heat/elec
ductility - drawn into wire
tensile strength - Resistance to Being Pulled apart
nonmetals
dull
brittle
insulator
metalloids

3 Types of elements

metals

luster

malleable - formable shapeable

Conduct heat/elec

ductility - drawn into wire

tensile strength - Resistance to Being Pulled apart

non metals

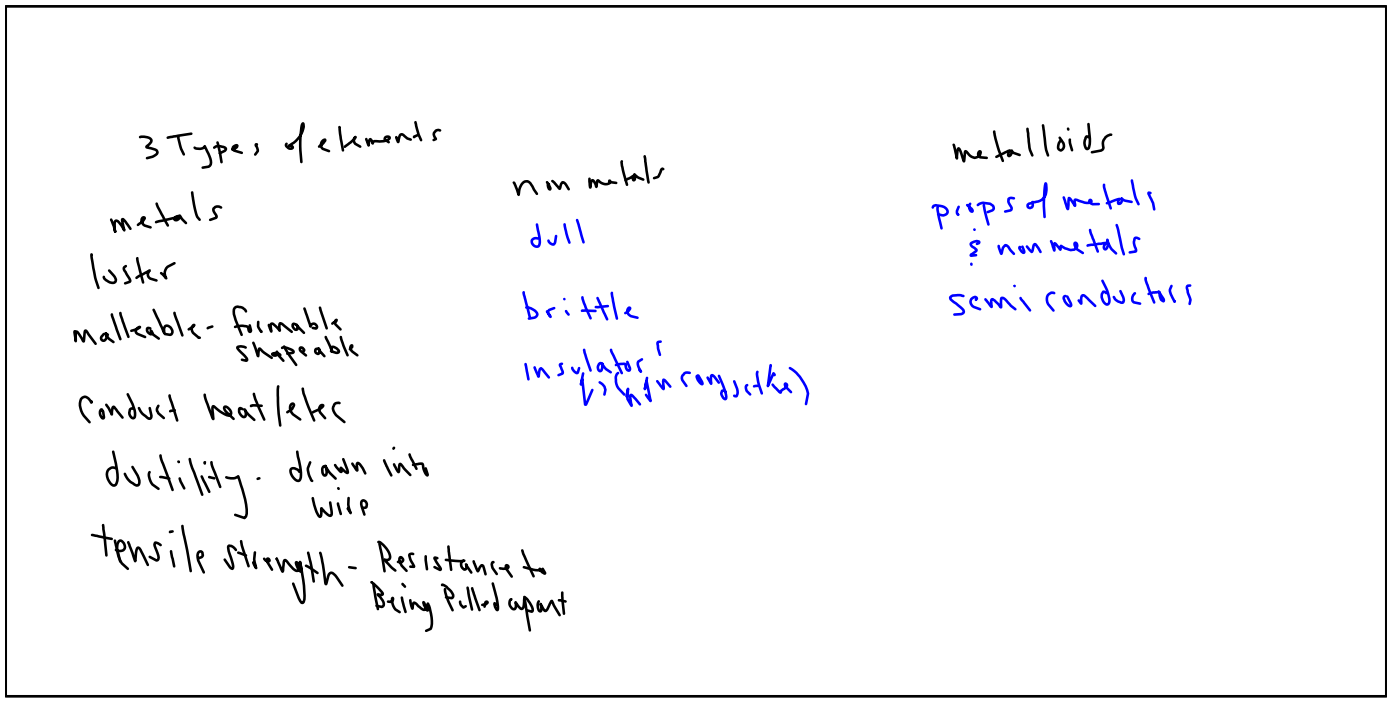
dull

brittle

insulators (non conductive)

metalloids

props of metals & non metals


3 Types of elements
metals
luster
malleable - formable
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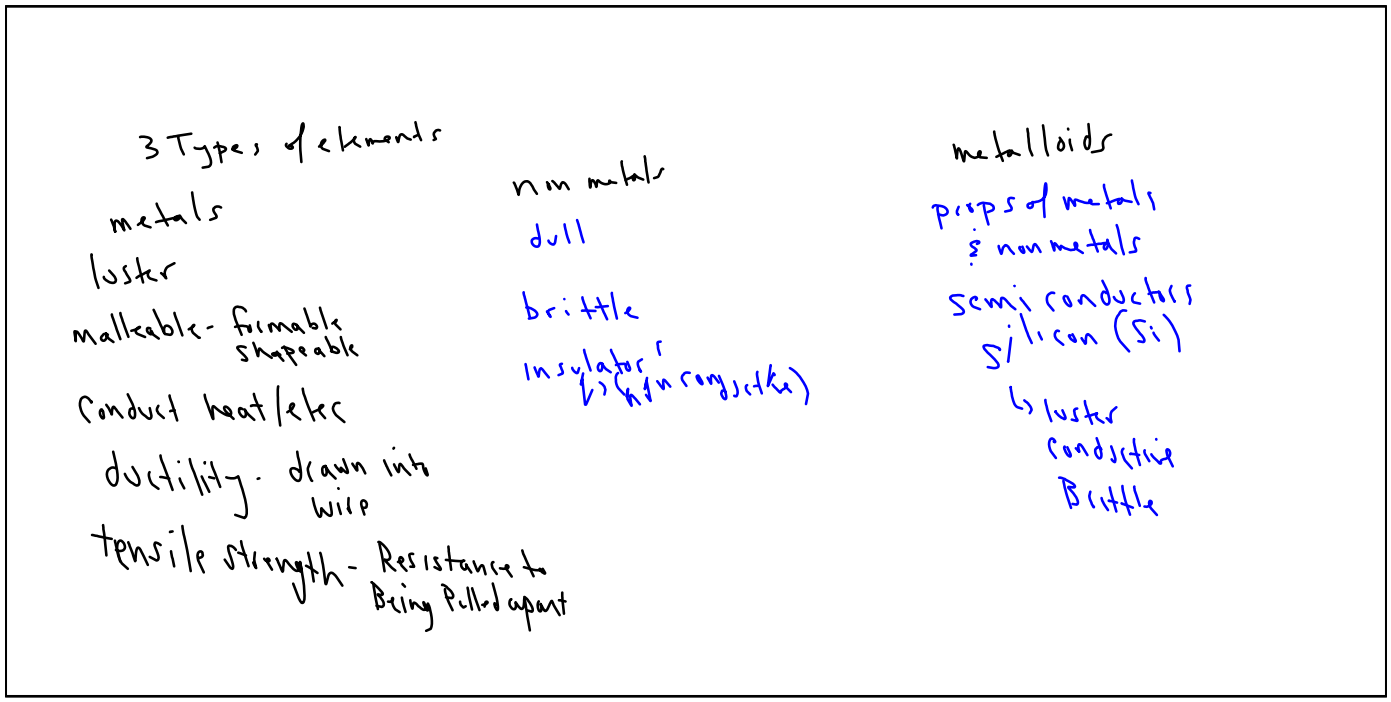
conduct heat/elec
ductility - drawn into wire
tensile strength - Resistance to Being Pulled apart
non metals
dull
brittle
insulator
(Resistance)
metalloids
props of metals & nonmetals
semiconductors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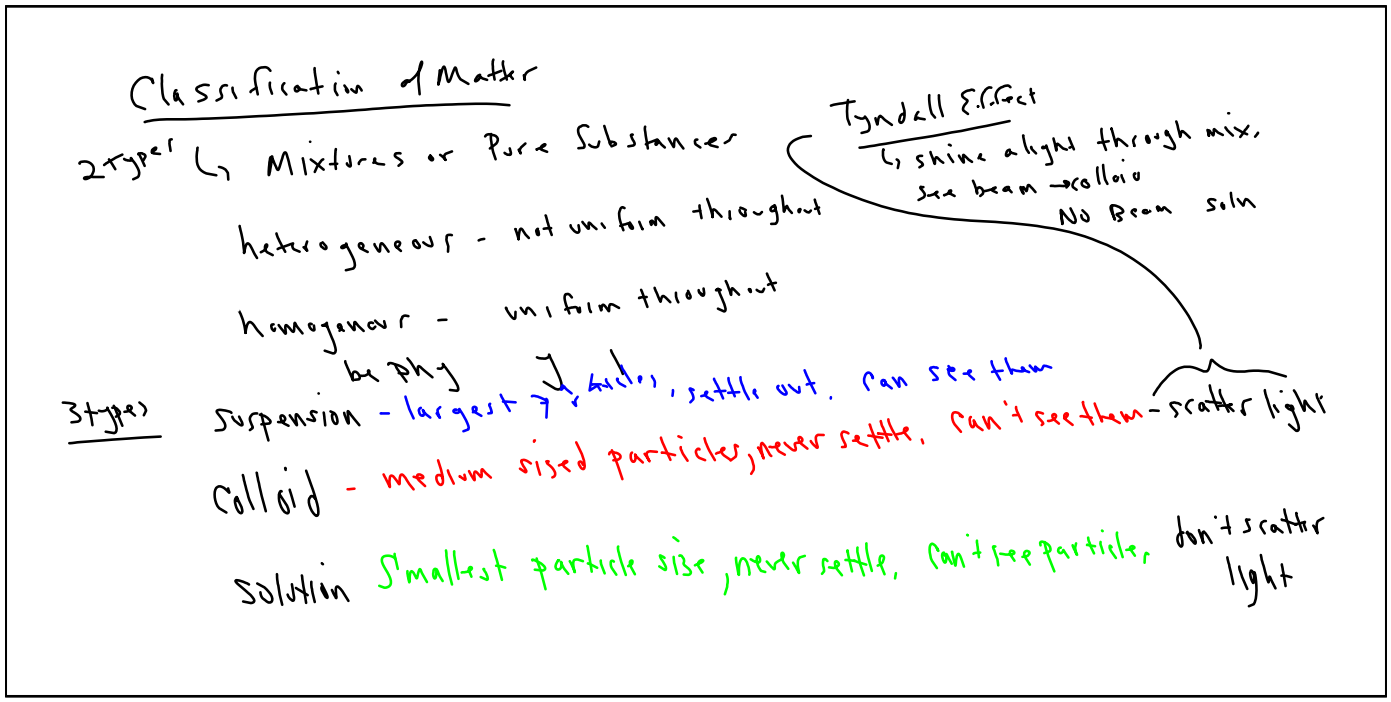
non metals
dull
brittle
insulator
(don't conduct)
metalloids
props of metals & nonmetals
semi conductors
silicon (Si)
luster
conductive
Brittle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2 types
Mixtures or Pure Substances
Tyndall Effect
shine a light through mix.
see beam → colloid
No Beam soln
heterogeneous - not uniform throughout
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by phy
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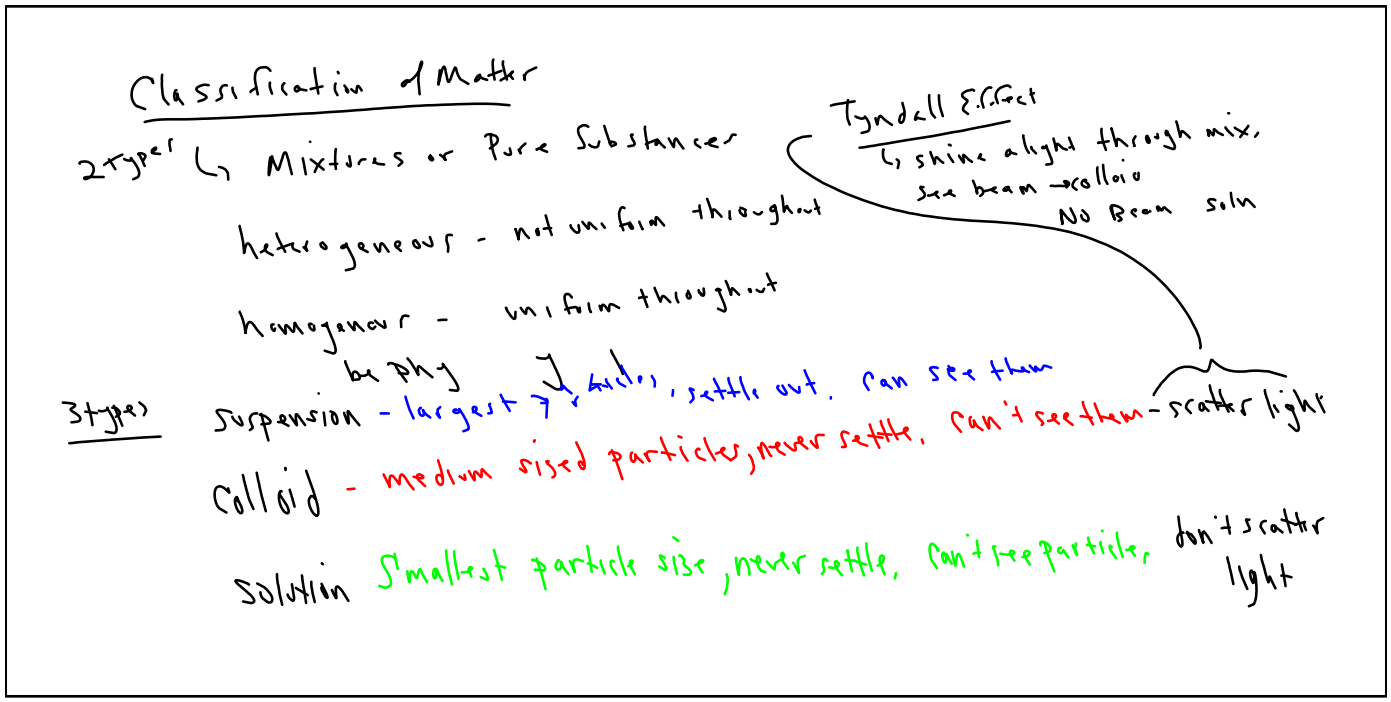
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